

**TITLE: INCOMING LIGHT CONVERGENCE & LIGHT GUIDED REFLECTION  
DISPLAY DEVICE**

**BACKGROUND OF THE INVENTION**

5 (a) Field of the Invention

The present invention relates to a display device, and more particularly, to one that has a focusing convex lens or a reflection concave lens to converge the incoming light into beams; the brighter light is projected into one end of a light  
10 guide device, then reflected from the other end to produce optical reflection in one or multiple directions to display text or pattern.

(b) Description of the Prior Art:

The conventional display by reflection is made through a  
15 coating or a surface capable of reflecting geometric forms to reflect the incoming light for display.

**SUMMARY OF THE INVENTION**

The primary purpose of the present invention is to provide  
20 a device to converge and guide an incoming light for reflection to display text or pattern. To achieve the purpose, a focusing convex lens or a reflection concave lens is used to converge the incoming light into beams. The brighter light is projected into one end of a light guide device, then to reflect from the  
25 other end to produce in one or multiple directions optical reflection to display text or pattern.

**BRIEF DESCRIPTION OF THE DRAWINGS**

Fig. 1 is a block chart showing a structure of a display  
30 device of the present invention operating by converging and

guiding light to reflect for display; and

Fig. 2 is a circuit block chart showing that a structure of the present invention is applied in combination with another device that converts power into optical energy for a mixed display.

#### DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

The present invention is a device of converging and reflecting an incoming light through a light-guided device for display. Within, a light convergence device comprised of a convergence convex lens or a reflection concave lens is used to converge the incoming light into light beams. Brighter light beams then are projected into one end of a light guide device and reflected from the other end in one or multiple directions to display text or pattern.

Referring to Fig. 1, additional to suspension or fixation structure, the display device of the present invention is essentially comprised of:

- a light convergence device 100: related to one or more than one unit of convergence convex lens or reflection concave lens subject to light coming from one or multiple directions so to converge and intensify the light from a selected direction before it being projected to one end of a light guide device 101 and reflected from the other end of the light guide device 101 to display selected text or pattern; and
- a light guide device 101: comprised of a reflection mirror or light guide fiber to receive light beams intensified and outputted by the light convergence device 100 when exposed to a light source, then to project the light in one or multiple directions either by the light guide device 101 or by means

of a rectification mask to produce light reflection with brighter light beams for displaying selected text or pattern.

As required, the light convergence device 100 may be provided at one or more than one directions, and identical or  
5 different texts or patterns displayed by the light guide device 101 may be selected for display by the display device operating by converging and guiding the incoming light for reflection.

Alternatively the light guide device 101 may be programmed for continuous light reflection to display identical or  
10 different texts or patterns by changing an incidence of light in relation to the light convergence device 100 and by programming the light projection location, texts and patterns from the aspect of display in relation to the light guide device 101.

15 Fig. 2 shows a circuit block chart of a structure of the present invention in combination with another display device operating by converting power into optical energy. As illustrated, the combined application includes the display device and a solar cell that converts optical energy into power,  
20 or a windmill power generation device or a city power source, and a secondary source 104 comprised of a storage device as optional. The combined application provides the following auxiliary functions:

- (1) A circuit device 102 for control the light adapted to  
25 the present invention drives an auxiliary device 103 which converts power into optical energy for display when the background becomes dim, and the circuit device 103 is immediately cut off once the background lights up. The auxiliary display device 103 can be operated and  
30 controlled for continuous display when the present

invention is exposed to incoming light. The auxiliary display device 103 when driven by the incoming light executes display of text or pattern and an operation and control of time-delay periodical cutoff to achieve mixed display with the text or pattern display produced by reflecting the light through the light guide device 101 where the incoming light is converged and intensified; or

- (2) The device operating by converging and guiding the incoming light to reflect for display is provided with a light activated auxiliary power to drive another display device that converts power into optical energy for text or pattern display or audio signal transmission; or
- (3) The device operating by converging and guiding the incoming light to reflect for display is provided with an optical conversion device to convert the incoming light into power that can be charged into a storage device as a stand-by to drive the device that converts power into optical energy for display or the audio signal transmission device.

The present invention by converging and intensifying an incoming light to reflect for display text or pattern through a light guide device offers better results and brighter display than that does by the direct reflection of the prior art. Therefore, this application is duly filed accordingly.